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This study used a diffusion model in an attempt to understand the role of the researcher in the evaluation of an educational innovation in a school setting. The Learning Laboratory for Adult Basic Education at the Rochambeau School in White Plains, and the Brevoort Community Center in Bedford-Stuyvesant, Brooklyn, were studied. Both programs used a multimedia basic education system developed by a commercial firm. Agencies and teachers in the two projects appeared to perceive the research coordinator as being, in addition to a professional in research design and methodology, a communicator in the program planning and teacher training phases, rather than a change agent. Although knowledge level and other factors might contribute to differences in content and objectives, the researcher was expected to transmit efficiently both research and nonresearch information. Teacher training and experience also seemed to affect communication and the adoption of innovation. (ly)

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The Researcher's Role in the Diffusion of an Innovation:

A Comparative Study

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The emergence of the researcher from the educational setting into the business and industrial complex has increased with the rapid devel-opment of commercially produced learning systems and various multi-media instructional programs. An educational researcher may conduct formative or developmental research on a product which has not been marketed or he may evaluate a product within an ongoing educational setting. The purpose of this study was to utilize a diffusion model in an attempt to understand the role of the researcher in the evaluation of an educational innovation in a school setting. It was also intended that implications from this study might be useful to administrators of adult education programs and researchers in the field of adult education as they consider the development of further research projects. This study emerged from two larger studies to determine the effectiveness of a multi-media communications skills system in teaching functionally illiterate adults to read. One of the projects was developed by the New York State Education Department, Bureau of Basic Continuing Education; the White Plains, New York Adult Education Center; and the Research Department of Educational Developmental Laboratories, Huntington, New York. The other study was sponsored by the New York State Education Department, Bureau of Basic Continuing Education; the Adult Education Act, 1966, Title III Adult Basic Education Program, New York City; and the Research Department of Educational Developmental Laboratories, Huntington, New York. Since the instructional system had not been used by the White Plains staff or the New York City staff prior to the inception of the study, this pilot project was designed to examine the diffusion process which would culminate in the adoption of the educational innovation by

the staff and faculty in these two adult education centers.

The settings for the studies included the Learning Laboratory for Adult Basic Education at the Rochambeau School in White Plains and an adult basic education class in the Brevoort Community Center in the Bedford-Stuyvesant area of Brooklyn, New York. One of three Learning Laboratories in New York State, the Rochambeau School is characterized by the New York State Bureau of Basic Continuing Education as having: (1) a pioneering feeling for innovation; (2) community support for the improvement of adult education programs; (3) a school building devoted solely or primarily to fulltime use by adult students; (4) a core of trained adult basic education personnel including administrators, teachers, guidance counselors, recruiters, and secretaries. The Rochambeau School had been used for an on-going adult education program since 1964 and the Learning Laboratory had been in existence since 1966. The Brevoort Community Center adult basic education class, on the other hand, began its initial operation in January, 1968.

The White Plains study was established with an experimental group consisting of 50 daytime students in adult basic education classes at the Rochambeau School who used a multi-media basic education system developed by Educational Developmental Laboratories during the spring semester, 1968, and an ex post facto control group consisting of students who had used traditional instructional materials in the learning laboratory the previous year. Directly responsible for the instruction of the students were five teachers, the Laboratory Supervisor, and the Learning Laboratory Specialist. Administrative personnel included the Principal, the Adult Basic Education Instructional Supervisor, and the Director of Adult Basic Education.

The teachers averaged about five years of teaching experience prior to the study. Two of the five teachers had taught disadvantaged adults before beginning the study. Three of the teachers had used programmed materials and had received in-service training in reading instruction and in adult education before the inception of the study and all five held a bachelor's degree from college although none had majored in reading. Four of the five teachers had also taken some graduate work. None of the five teachers had participated in volunteer activities with the disadvantaged prior to their employment at the Rochambeau School and none held memberships in professional organizations. The teachers were employed on an hourly basis and they met with the students five days a week.

The experimental group in the New York City study included 40 evening students in classes at the Brevoort Community Center who used the Educational Developmental Laboratories' multi-media basic education system and 40 evening students attending Adult Basic Education classes in other locations in the Bedford-Stuyvesant area of Brooklyn during the spring semester, 1968. Instruction at the Brevoort Center was conducted by two teachers and administrative personnel which included the Project Director, Supervisor of Instruction, Supervisor of Guidance, the Area Supervisor, and the Teacher-in-Charge.

Both teachers held full-time teaching positions during the day in which they taught reading and related language arts to maladjusted boys. Their teaching experience averaged approximately 15 years and both had taught adults prior to the study. They each held a bachelor's degree from college and they had taken some graduate work in reading. Neither of the

teachers had used programmed materials prior to the study. The teachers had participated in volunteer activities with the disadvantaged before teaching at the Brevoort Center and they both held memberships in professional organizations. The teachers were employed on an hourly basis and they met with the students four evenings a week.

Each of the cooperating agencies in the two projects held a set of objectives which they hoped to achieve through the research studies. Educational Developmental Laboratories funded the two projects and provided the research coordinator with the assumption that if students who had used the system scored higher on a standardized achievement test than students who had used a traditional method the research results would serve as evidence of the success of the system. The New York State Bureau of Basic Continuing Education sought evidence from the study from which to decide whether or not to recommend the use of the system in other learning laboratories and adult basic education classes throughout the state. The Rochambeau School staff and the New York City staff wanted data which would indicate whether the instructional system would aid in motivating students to attend classes - resulting in increased attendance - and in providing a solid base for teaching communication skills. They also were willing to participate in the projects since this would uphold their image of commitment to innovation. And, the Rochambeau School and New York City faculty were willing to try new materials and instruments that would aid in increasing student motivation and achievement and that would provide what they considered, "Much needed structure" in their communication skills program.

In examining the diffusion of the innovation in the White Plains and

Bedford-Stuyvesant settings one may refer to Rogers' diffusion of innovations model. He contends that there are four crucial elements in the analysis of the diffusion of innovations. They are (1) the innovation; (2) its communication from one individual to another; (3) in a social system; (4) over time. He explains that these four elements are similar to those listed by Katz as essential in any diffusion study. Katz's model includes: (1) the tracing of an innovation (2) over time (3) through specific channels of communication, and (4) within a social structure.[1] According to Rogers' model a social system is a population of individuals who are functionally differentiated and engaged in collective problem-solving behavior. He says that although members of a social system are individuals, these individuals may represent informal groups, industrial firms, or schools. Within a social system, according to Rogers, there is a change agent, a professional person who attempts to influence adoption decisions in a direction that he feels is desirable.[2] Typical change agents from business and industry might be salesmen, dealers, or consultants, for example.

One might speculate that a research coordinator employed by a business or industrial firm might be perceived by the agencies outside as well as inside the company as a change agent - that is, he would serve as a professional person attempting to influence adoption decisions in a direction that he feels is desirable. Depending on the role perception of the individual researcher, conflict might arise, therefore, if the researcher perceives his role as that of the objective analytical researcher.

A review of the role of the research coordinator in the White Plains

1. Everett M. Rogers, Diffusion of Innovations, New York: The Free Press of Glencoe, 1962, 12.

2. Ibid, 15.

and Bedford-Stuyvesant projects, however, suggests that the agencies in the project perceived the researcher's role, in addition to that of a professional in research design and methodology, not as that of a change agent, but as that of a communicator - one who facilitates the process of communication between the communication source and the communication receiver. In other words, in utilizing the Rogers' model, the focus is on Step 2 of the diffusion process.

Most communication models concerned with the process of communication are a continuum consisting of: (1) the communication source - some person or group of persons with a purpose, a reason for engaging in communications; (2) the encoder who is responsible for taking the ideas of the source and putting them in a code and who expresses the source's purpose in the form of (3) the message which is carried by a (4) channel - defined as a medium of communication - to that which is decoded by a (5) decoder or retranslater in a form that can be used by the (6) receiver.[3] A person engaged in the communication act may function as either a communication source, receiver, encoder, decoder, or channel or he may perform more than one set of behaviors. For example, the same person may be both a source and a receiver, even simultaneously. The function that the person performs in the process of communication does depend, however, on how he is viewed by other persons, the context in which he is placed, etc. Therefore, even if the research coordinator might be viewed as a communicator by all the individuals involved in a project, his function within the communication process would differ according to the time, the setting, and the perceptions of the individuals within the several sub-systems or agencies.[4]

3. David K. Berlo. The Process of Communication. New York: Holt, Rinehart and Winston, 32.

4. Ibid., 37

For example, the research coordinator of the two projects met in October, 1967, with the Principal, Director of Adult Basic Education, the Adult Basic Education Instructional Supervisor, and the Learning Laboratory Specialist from the Rochambeau School and the Project Director, Supervisor of Instruction, and Area Supervisor from the New York City project as well as representatives from the New York State Bureau of Basic Continuing Education to discuss the research designs which were to be implemented in January, 1968. During the meeting, however, it became evident to the research coordinator that most of the personnel attending the meeting had very little knowledge of the theory, rationale, and implementation of the system. Only three of the persons attending the meeting had ever seen the system in operation and only one of the three had ever operated any part of the system.

Therefore, in the context of the communication model, although the research coordinator had expected to receive a message from the persons attending the meeting regarding their research needs, the researcher's role was perceived by the persons attending the meeting as that of both source and channel. By some she was expected to provide information regarding the background of the system. From the viewpoint of the Learning Laboratory Supervisor and the Director of Adult Basic Education at the Rochambeau School, however, she was expected to act as a communication source - that is, to provide information regarding the operation of the laboratory. Questions were asked such as, "How do we design the laboratory so that all the machines will fit into the space we have available?" "How do we schedule our classes so that all students will be able to use the machines each day?" "How many copies of each workbook do we need?"

Questions asked by the New York City staff were of a similar nature. The staff was concerned about the need for providing secure storage for the expensive machines, finding a room for the classes, and allowing enough time in the schedule so that mathematics and social living would not be excluded.

The communications role of the research coordinator was further heightened when the research coordinator was asked by Educational Developmental Laboratories to plan the teacher workshop to be held at the Rochambeau School in November, 1967, and to aid with teacher training at the Brevoort Community Center in December, 1967, and January, 1968. She was to provide information regarding teachers' backgrounds, the student body, and the organization and structure of the Rochambeau School and Brevoort Center to the Educational Developmental Laboratories consultants who were to lead the workshop and conduct the teacher training. In performing this act the research coordinator served as a communication source and the effectiveness of the communication between herself (the source) and the Educational Developmental Laboratories consultants (the receiver) depended upon four factors affecting the source which can increase fidelity (the expression of the meaning accurately.) These factors include: (1) communication skills: (2) attitudes; (3) knowledge level; and (4) position within a social-cultural level.[5]

A complaint voiced by the individuals in the two projects, particularly by the staff at the Rochambeau School, was that although the research coordinator could channel some messages to the Educational Developmental Laboratories management and consultants, this was often an unwieldy procedure. They suggested to the research coordinator that they needed

to know when they should channel various questions to the research coordinator, to the consultants, to the salesman who was in charge of the maintenance of the instruments, etc. Therefore, the research coordinator was again called upon to serve a communication role - to provide this information to the Educational Developmental Laboratories management and to serve as a source of information for Educational Developmental Laboratories by suggesting a method for delimiting the responsibilities of the Educational Developmental Laboratories staff who were involved in the projects.

During and after the November workshop at the Rochambeau School and the December and January teacher training sessions at the Brevoort Center, the Educational Developmental Laboratories consultants attempted to guide the staffs in organizing the learning enviornment. Since there was some conflict regarding the specifications of the instructional system, the research coordinator again assumed a liaison position between the consultants, the Bureau of Basic Continuing Education, and the Rochambeau School and Brevoort Center staffs in order to be certain that the system was used the way it had been intended to be employed by the editors of the system and that the specifications of the research design be followed so that data needed by the Rochambeau School staff, the Brevoort Community Center staff, the Bureau of Continuing Education, and Educational Developmental Laboratories would be provided. After the projects got underway in January, 1968, the research coordinator continued to perform in a communication role. She was called upon by the Rochambeau School staff in particular to communicate to the Educational Developmental Laboratories engineers problems regarding malfunctioning

instruments and to communicate to the consultants problems regarding unworkable class schedules, for example.

The Rochambeau School teachers and the Brevoort Center teachers also perceived the research consultant in a communication role. Because the research design specified that teacher interviews would be conducted three times during the semester, the research coordinator met with the teachers to administer an oral questionnaire in February, April, and June. In addition to answering the questions asked by the research coordinator, the Rochambeau School teachers also sought answers to questions they had regarding the use of the system within their own classrooms. They expressed their hostility toward the project by citing problems resulting from malfunctioning instruments and a lack of proper teacher training. They also expressed their displeasure with certain administrative procedures at the school itself. A few teachers also said they felt inadequately prepared to teach adults using any type of curriculum. And some also said they disliked being tied down to certain procedures necessary to fulfill the research design. They used expressions such as "Go tell the Educational Developmental Laboratories editors we need an answer key immediately".

The Brevoort Community Center teachers expressed less hostility in their messages to the research coordinator. Although they indicated they had been highly frustrated by lack of adequate teacher training and malfunctioning instruments, they seemed to take a more positive attitude toward solving these problems. They attempted to repair the instruments themselves and to study the "Teachers Manual" and other materials provided by the consultants. The teachers also told of their personal relationships with their students - how they took them on theater trips,

etc., as part of their general cultural enrichment. The teachers also expressed opinions on how the instructional system might be improved and suggested various innovative techniques which might be used with the instruments. The teachers were especially anxious to have these suggestions relayed to the Educational Developmental Laboratories management, engineers and editors.

In summary, the role of the research coordinator did not seem to be perceived by the individuals in the study as a change agent which might be suggested from the Rogers' model. Instead, the research coordinator was perceived as a communicator who was expected to perform various communicative acts depending on the needs and objectives of the persons involved in the research project. Although knowledge level, communication skills, attitudes, position within a social-cultural level, and instructional environment may contribute to differences in the content of the messages and the purpose of the communication of the various sus-systems, it appears that whatever of these factors were involved, the individuals seemed to expect the researcher to provide high fidelity when becoming a communication source, whether the information transmitted through her messages was of a research or nonresearch nature. The data also seems to indicate that the training and experience of adult basic education teachers has an impact on the process of communication and the adoption of an innovation in an ongoing setting. Although the sample of teachers in this pilot study is very small and the purpose of this study was not to examine teacher training, questions arise regarding teacher experience which may be an area of concern for future research.

The results of the study pose several questions which might be concerned by adult education administrators and researchers. These

include: (1) Is it possible for a person trained primarily as an educational researcher to effectively serve the role of a communicator? (2) Does a conflict of interest arise if the researcher serves both as the major communicator and educational researcher responsible for objective evaluative research in an ongoing research setting? (3) If the educational researcher is to serve as a communicator, has he had the formal training on the university level to fulfill the role? (4) Does business and industry perceive the role of the educational researcher as that of change agent, objective and analytical evaluator, communicator, or a combination of the three?

These questions arising from the pilot project might well serve as a basis for further research in the diffusion of innovations and the role of the researcher in the evaluation of the innovations in an ongoing educational setting.

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